



UDC 332

**ECONOMIC VALUATION OF THE FATUMNASI NATURAL TOURISM AREA,
TIMOR TENGAH SELATAN REGENCY, INDONESIA**

Nalle Agus A.*

Postgraduate Program, University of Nusa Cendana, Kupang, Indonesia

Asa Halena M.

Faculty of Medicine and Veterinary Medicine, University of Nusa Cendana, Indonesia

Welhelmina Kameo

Faculty of Teacher Training and Education, University of Nusa Cendana, Indonesia

*E-mail: agusnalle@staf.undana.ac.id

ABSTRACT

The aim of this research is to analyze the economic value of the natural tourist area of Fatumnasi, south-central Timor regency. Based on the actual condition, the government relies on this natural tourist area as an important attraction, and there is a tendency to increase the number of tourist visits. The research and problem-solving analysis approach uses travel cost analysis and multiple linear models to analyze the factors that influence the number of tourist visits. Similarly, the calculation of consumer surplus is a proxy for regional economic value. The research results show that the variable level of tourist income has a significant effect and has a positive sign, while the travel cost factor has a significant effect and has a negative sign on the level of tourist visits. The total consumer surplus value as a proxy for the economic value of the Fatumnasi natural area was obtained at IDR 633,630,600. In this way, the value of the Fatumnasi natural tourism area can be increased if it is managed more professionally, and conversely, it will lose the value of the consumer surplus if its management fails. Based on the results of research, it is necessary to organize the area more professionally, such as by providing various supporting facilities and infrastructure to guarantee comfort (amenity) for tourists. Likewise, it is necessary to foster and develop community business activities as well as encourage community participation through the development of MSMEs (micro, small, and medium-sized enterprises), especially in the productive sector, which has strong linkages, both forward and backward linkages, with existing tourism objects and activities.

KEY WORDS

Natural Tourism area, regional economic value, public service, development.

The development of the tourism sector in East Nusa Tenggara (NTT) is a crucial aspect of the regional economic development strategy. In this context, national policies, especially those related to the development of Komodo National Park in Labuan Bajo as a super-priority tourist area, play a central role. The Provincial Government of NTT, through its Medium-Term Regional Development Plan 2018–2023, has expressed its determination to develop the tourism sector. This mission articulates the importance of making NTT a gateway and center for national tourism development, reflecting a broader vision to enhance the tourism profile of the area.

The development of tourism in Nusa Tenggara Timur (NTT) has garnered attention, particularly in understanding alternative tourist sites beyond Labuan Bajo, which has been the primary focus of existing research efforts. This initiative aims to address this knowledge gap by evaluating potential tourist sites and their impact on regional economic development (Rajaratnam et al., 2015). Additionally, the ecological and economic aspects of tourism development in NTT need to be comprehensively understood to integrate environmental conservation into tourism planning (Nursiani et al., 2023). The development of tourism in



rural areas of NTT presents opportunities for rural development, with visitor satisfaction being a key factor in supporting sustainable rural tourism development (Matondang, 2017).

Fatumnasi, a natural tourist site in Labuan Bajo, has seen an increase in visitors, with government policies contributing to this rise. The number of tourists visiting Fatumnasi is expected to continue increasing, especially during the holiday season (Trihandayani et al., 2022). This highlights the potential for rural tourism to attract visitors to specific destinations, as evidenced by previous studies on rural tourist destinations (Buluamang, 2019). Furthermore, the impact of destination quality and experience involvement on tourists' satisfaction and word of mouth has been emphasized, indicating the significance of these factors in rural tourism (Park & Yoon, 2009).

The potential for rural tourism to function as a primary attraction for tourists has been extensively studied, emphasizing the importance of factors such as previous experience and service quality in attracting tourists to rural destinations (Nugraha et al., 2021). Additionally, the involvement of local communities in decision-making processes is crucial for the success of tourism development policies and operations (Sebby, 2018). Moreover, the impact of the COVID-19 pandemic on the tourism industry has been significant, affecting transportation, hotels, and restaurants in various destinations, including Vietnam (Keyim, 2017).

The government's role in affecting tourism and the influence of state public policy on tourism development have been subjects of interest, highlighting the need for effective governance and policy frameworks to support tourism development (Geng et al., 2021). Furthermore, the importance of local wisdom in tourism development and its impact on the welfare of local communities has been recognized as a differentiating factor for tourist sites in NTT (Lukitasari et al., 2021). Additionally, the significance of visitor satisfaction in tourism destination management has been emphasized, indicating its role as an essential indicator of success in tourism (Bire et al., 2021).

In conclusion, the development of tourism in NTT, particularly in exploring alternative tourist sites, integrating environmental conservation, and promoting rural tourism, presents significant opportunities for regional economic development. Understanding the factors influencing visitor satisfaction, the impact of government policies, and the involvement of local communities are crucial for sustainable tourism development in the region.

However, it is important to note that tourism development must consider both economic and environmental impacts. As highlighted by Chee (2004), the importance of estimating the economic benefits of recreational destinations cannot be overlooked. This research aims to measure the economic value of the Fatumnasi natural tourism area, providing a basis for policy formulation that supports the enhancement of local community welfare without compromising environmental sustainability.

To address this knowledge gap, this research focuses on measuring the economic value of the Fatumnasi natural tourism area. The results of this research are expected to provide valuable insights for sustainable tourism development in NTT and guide policy formulation for the development of the area.

THEORETICAL REVIEW

Ecotourism Development Concept

Ecotourism is a market for environmentally conscious tourists who are interested in enjoying the beauty of nature. More broadly, experts often combine motivation, philosophy, behaviour, and economic benefits for conservation, where ecotourism is a form of tourism that is primarily inspired by the natural history of an area, including its indigenous culture.

Surakusumah (2012), quoted by Muryani (2016), defines ecotourism as a concept for sustainable tourism development that aims to support environmental conservation efforts, increase community participation in management, and provide economic benefits to local communities. Ecotourism has become a trend and a demand, which in turn creates opportunities to attract more tourists. Regarding ecotourism destinations, conservation strategies are used as the basis for tourism development, with the hope that nature



conservation can be improved. Therefore, ecotourism is very appropriate and efficient for maintaining the integrity and authenticity of ecosystems in untouched areas.

Based on the description related to the ecotourism concept, which is linked to the development of the Fatumnasi natural tourist attraction, which is also located in the Mutis-Timau Nature Reserve area, efforts to improve and organize the area in question are very necessary. The unique natural beauty of forest, mountain, and valley areas, accompanied by cool weather conditions, livelihood activities, and cultural customs of local communities, must be the focus of improvement so that they can have an impact on the welfare and progress of the area concerned. For this reason, efforts to identify and estimate the economic value of the area in question are expected to encourage efforts to preserve the area in a sustainable manner.

Economic Valuation Concept

Economic valuation basically starts with understanding the value of a good or service. Values are something that is believed to be true and encourages someone to create them in reality. Values are important and are often the main measurement indicators of goods and services. Value is often associated with the concept of 'price' in society. Spash et al. (2005) stated that values are items that guide individuals to weigh and choose alternative decision-making in certain social situations. Leh et al. (2018) suggest that values are relatively stable conceptual standards that explicitly or implicitly guide individuals in determining the goals to be achieved and activities to fulfil psychological needs.

Economic valuation of the benefits and impacts arising from the management of natural resources and the environment is very necessary for policymakers and the economic analysis of an activity. Suparmoko et al. (2014) state that environmental value is differentiated on the basis of use (instrumental value) and value on the basis of non-use (non-use value), or the value contained in natural resources and the environment (intrinsic value). Value based on use shows the ability of the environment when used to meet needs, while the value contained in the environment is the value inherent in that environment.

Tietenberg and Lewis (2012) state that economists group the total economic value of resources into three groups: use value, option value, and non-use value. Use value reflects the direct use of natural resources and the environment. Some experts call it passive use value or no consumptive use value. Option value reflects the value of a location for future use. This value reflects the willingness to pay for choices to preserve the environment. Given that this value is derived from the actual existing value, the option value also reflects the desire to maintain the possibility of potential preservation value in the future. The third category of non-use value reflects the greater desire of society to be willing to pay to improve or preserve unused resources. This non-use value includes heritage value (bequest value) and existence value (existence value).

To determine the value of natural resources in the context of the economic valuation of natural resources and the environment, Suparmoko et al. (2001) classified values based on actual markets, values based on substitute markets, and values based on surveys. The actual market value can be further classified as direct value, which is the economic rent achieved from the direct use of a natural resource. Likewise, indirect value is in the form of productivity value, shadow value, prevention value, opportunity value, and so on. Value based on the replacement market is mapped into the value of assets and wealth (hedonic price), wage levels, and travel costs. While the value is based on a survey, it is obtained through modelling options and contingent valuation. Value is the satisfaction received by predicting that future generations will benefit from a protected area. Non-use value is broadly derived from intergenerational equity, utility functions, and the existence of intrinsic environmental value (Bateman et al., 1996).

Valuation is used to make a comparison between marginal benefits and marginal costs. It requires an assessment using monetary units as information in the form of numbers. Marginal cost describes the value of a person provided by the market. A person's choices are seen in his actions in selling and buying in the market. This is what is called "market value." Marginal benefits are needed to obtain market data regarding direct use value. A person's



preferences for resource goods are seen indirectly through markets or directly through surveys. This is what is called non-market value. Marginal costs usually address the issue of additional financial loss if the use of environmental resources is limited. Meanwhile, marginal benefits usually discuss additional benefits that are difficult to measure from environmental protection.

Travel Cost Method

The travel cost method (TCM) was developed by Clawson [1959] and originally suggested by Hotelling [1949] in order to estimate the social benefits of recreation in natural places. This method is based on the assumption that the benefits of recreation at a particular site can be derived from a demand function, estimated by observing the behaviour of users in relation to the costs incurred by them per number of visits. In other words, the classical model comes from the economic theory of consumer behaviour, which argues that consumer choices are not only based on price but on all the sacrifices made to obtain the flow of benefits generated by a good or service (Rosato and Defrancesco, 2002).

Tietenberg and Lewis (2012) state that travel cost methods can estimate the value of recreational resources (such as sport fishing, parks, and national parks) by using information about how much visitors spend to build a demand curve from willingness to pay and length of time spent. Freeman (2003), quoted by Tietenberg and Lewis (2012), identified two variants of this approach method. The first variant is traced through the number of trips to the location. This makes it possible to develop a travel cost-function model. And the value of the services obtained is the part below the estimated demand curve for visits to a location, which is an aggregation of all existing visitors. The second is traced through visitors' decisions to visit one location or another. This second variant includes a typical model, namely the variation model of satisfaction from changes in quality values.

The fundamental assumption used in the TCM approach is that the utility of each consumer for activities, for example, recreation, is separable. Therefore, the demand function for recreational activities is not influenced by the demand for other activities. The individual travel cost method treats a person's trip to a location as an amount requested, while travel costs are assumed to be the access value of the site or location visited (Czajkowski et al., 2015).

Dvorak (2007), quoted by Spacek and Antouskova (2013), states that the travel cost method is a consumer-oriented method and is widely used to assess the services and/or facilities provided, such as for recreation, natural reserves, and so on. The rationale behind the travel cost method is based on the consideration that tourists will visit a tourist location if they can obtain the benefits provided at that location. The money spent to reach that location in the form of travel costs is a form of the tourist's willingness to pay.

METHODS OF RESEARCH

The research location is the Fatumnasi tourist area, Fatumnasi District, Timor Tengah Selatan Regency. The research was conducted from May to October 2023. The types of data used were secondary data and primary data. Primary data was obtained from surveys and interviews with a number of tourists met during the research.

The travel cost method is used to solve problems and achieve research objectives. Apart from that, descriptive analysis was carried out on qualitative variables, in this case the general conditions of the region, tourists' perceptions of natural tourism objects, socio-eco region conditions, and so on. To examine the factors that influence the level of tourist visits, use the multiple linear analysis method. These factors include income level, distance travelled, transportation costs, consumption costs, tickets, parking, and souvenir purchases. The economic value of the area is approached by calculating the value of consumer surplus. The consumer surplus value is obtained using the limited integral equation, with the lower limit being the lowest transport costs paid by visitors and the upper limit being the highest transport costs incurred by visitors to travel to the Fatumnasi natural tourist area.



RESULTS AND DISCUSSION

Traveler Characteristics

The description of tourist characteristics is approached based on background variables and motivations for making tourist visits to the Fatumnasi natural tourist area. Respondent background variables are described as age, formal education level, type of work, and average income level. In general, the average age of tourists is 38.58 ± 13.58 years, with a minimum age of 18 years and a maximum age of 61 years. Based on the age distribution of respondents, it shows that the highest percentage is in the age range 26-35 years (29.09%), followed by the age range ≤ 25 years (23.64%), the group of tourists aged > 55 years (20.00%), the age range 46-55 years (16.36%), and the lowest in the age range 36-45 years.

From the aspect of education level, the percentage of tourists is dominated by those with a bachelor's degree or more (S1, S2, and S3 education) as much as 60%, followed by students and high school equivalents (20%), with a diploma (14.55%), and the lowest is a student group of 5.45%. Having the level of education is thought to guarantee a mindset and policy in decision-making to determine choices regarding the orientation and priorities for using leisure through recreation.

The jobs of tourists vary, and if grouped by type of work, the majority are those who work in the civil sector (47.27%), followed in succession by those who work as civil servant (23.64%), who still have student status. and students as much as 16.36%, and those working in various other types of work as much as 12.73%. The background phenomenon of the respondents' existing job types indicates that the need for recreation is increasingly dominating the respondents ability to obtain a comfortable situation, which is thought to be achieved by visiting tourist areas. Allman (2017) states that the aspects that determine and shape a person's motivation to travel include five dimensions: dark experiences, interesting entertainment, unique learning experiences, interests for leisure, and emotional aspects for recreation. Based on existing views and associated with the high dominance of respondents with work backgrounds in the social sector, it can at least be assumed that they want to have a relaxed atmosphere, achieve a beautiful and attractive natural mountain view, and reduce the emotional attitude they experience during recreation at Fatumnasi area.

Supporting a person's decision to travel to a tourist area or location cannot be separated from their level of income per month. And the level of income is also closely related to his work background. The results of the analysis show that the dominant income level of respondents is in the IDR income group. 5-7 million/month (40.00%), then followed by those who have an income of IDR 3-5 million/month (16.36%); 14.55% are those with an income of $<$ IDR. 1 million/month; and the lowest are those with an income of IDR. 1-3 million/month (4.54%). In total, 63.64% of respondents had an income level above IDR. 5 million/month, and the remaining 36.36% are those with income $<$ IDR. 1 million/month. With the distribution of existing income groups, it can be said that the respondent's decision to make a tourist visit, including to the Fatumnasi natural tourist area, individually depends on the financial capacity they have to guarantee and cover the costs that must be incurred, starting from transportation costs, consumption, and various cost components. other.

Tourists who visit the Fatumnasi natural tourist area are generally domestic or local tourists and come from mainland Timor. Meanwhile, before the COVID-19 pandemic, tourists also came from outside the ENT province, and a limited number of foreign tourists, such as Chinese, Japanese, Dutch, and Americans, also made tourist visits to the Fatumnasi natural tourist area. As many as 46.80% of respondents came from the Timor Tengah Selatan Regency area, and the remaining 53.20% of respondents came from other regencies on the Timor mainland, such as Kupang City, Kupang Regency, and Belu Regency.

Attractive factors that are thought to play a strong role for tourists include comfortable and cool natural and weather conditions, relatively easy accessibility, a variety of attractions such as natural scenery, culture, and agricultural, forestry, and livestock areas, as well as cultural potential that is still strongly embraced by the people in the local communities. As many as 40% of tourists reasoned that they visited Fatumnasi to gain new tourism



experiences, followed by 35.50% for recreation. And the rest, with a relatively low percentage, is for touring, visiting family, and various other reasons.

The unique attraction of the Fatumnasi natural tourist area is the most attractive factor for visiting tourists. This is a strong reason for the regional government to improve Fatumnasi's position as a mainstay tourist destination, and it is hoped that it can boost the regional and economic progress of the surrounding community. The participation of local communities in providing services for tourists is a new economic resource that can be developed and packaged in a more attractive way. For this reason, efforts to optimize the potential of the Fatumnasi tourist area are a form of interesting policy and strategy to be developed in order to support the accelerated progress of the region and surrounding communities in a real and sustainable manner.

Factors That Influence Tourist Visits

To identify the factors that influence tourist visits to the Fatumnasi natural tourist attraction area, multiple linear regression analysis was used. Based on the availability of data and information, in this case the willingness of tourists who are willing to convey this during interviews, as well as the results of the analysis of the relationship between the independent variable and the dependent variable, several independent variables were obtained and identified, which are factors that are thought to influence the number of visits (Y), namely income level (X_1), transportation costs (X_2), distance to tourist locations (X_3), tickets and permission to use public facilities (X_4), consumption costs (X_5), and purchasing souvenirs (X_6). The results of the analysis are presented in Table 1.

Table 1 – Results of a Multiple Linear Analysis of Tourist Visits to Fatumnasi

Variable	Coefficient	Value "t"	Sig.
Intercept	4,626	2,453	0,028
Revenue (X_1)	0,0003499	2,433	0,029*
Transport Fee (X_2)	- 0,003678	- 2,680	0,013*
Distance (X_3)	- 0,095	- 0,829	0,421
Entry Ticket (X_4)	0,02732	1,186	0,255
Consumption (X_5)	- 0,0002658	- 0,163	0,873
Souvenirs (X_6)	- 0,005297	- 0,680	0,507
F-calculated	10,533		
R-Adjusted	0,741		
R-Square	0,819		

The F-calculated value obtained from the model is 10,533, which is greater than the F-table of 2,383. This means that all the independent variables that exist together influence the variable number of tourist visits to Fatumnasi. The "t" test shows that there are two independent variables that have a significant effect ($\alpha = 0,05$) on the number of visits to Fatumnasi. These two variables are income level and transportation costs. Meanwhile, the other four independent variables do not have a significant influence on the number of tourist visits.

The determinant coefficient (R^2) value obtained was 0.819, which means that the independent variable in the equation was able to explain variations in changes in the variable number of visits by 81.9%, and the remainder could be explained by other independent variables that were not included in the equation. Thus, the factors used in the analysis are statistically good enough to be used in estimating the number of tourist visits to the Fatumnasi natural tourist attraction. The income level variable shows a significant influence with a positive sign, implying that if tourist income increases, it will increase the number of visits they make. Meanwhile, the transport cost variable has a negative effect on the number of visits; as transport costs increase, tourists will reduce visits to the tourist location in question. These results are the same as those found by Zulpikar et al. (2017), who found that travel costs have a significant effect on the number of visits to Batu Karas Beach, Pangandaran Regency. Meanwhile, from the results of this study, it was found that the



increase in income had an influence on the increase in the number of visits to the Fatumnasi natural tourist area.

Economic Value of Fatumnasi Natural Tourism Objects

The analysis of the economic value of tourist attractions in the Fatumnasi natural tourism area of Timor Tengah Selatan Regency was carried out by calculating consumer surplus. The regression equation that has been obtained, which reflects the function of tourist demand for natural tourist attractions, Fatumnasi, $Y = 4.626 - 0.003678X_2$, is the basis for estimating the economic value of the area based on the travel cost variable. From the results of the study, it was found that the lowest cost was IDR. 50,000 and the highest was IDR. 600,000. From the total consumer surplus value of IDR.663,630,600,- and combined with the average number of tourist visits to Fatumnasi during 2020 of 1,750 people, the average consumer surplus value per person was obtained at IDR. 379,217,-. This figure is the potential economic value of the Fatumnasi natural tourism area that can be achieved if it can be managed better.

The development of the community's economic aspects to deal with tourist visits can be improved through the development of micro, small and medium enterprise (MSME) units by utilising the potential of local resources that currently exist. This is important so that tourism development has a multiplier impact on the growth and development of MSME units in accordance with the natural resource potential of the region and the social culture of the local community. Until now, the development of MSMEs has been very limited to a few business units, such as plant farming businesses, which are traditionally managed by the community. MSMEs, such as processing industries based on plant and livestock products, are still underdeveloped. Likewise, the management of the potential of local customs and culture as a source of community economic strength has not been managed well. Handicraft and ikat business units still have a limited business scale due to limited business capital and skills.

Based on the results of the analysis of the economic potential of the Fatumnasi natural tourism area and its complexity, comprehensive development of the area needs to be carried out with appropriate policies and strategies. Management of natural tourism potential that exists and is spread within a cluster in the same direction of travel (such as Soe City, Bu'at Forest Tourism Park, Oehala Waterfall, and Fatumnasi Nature Tourism Area) as one unit needs to be carried out comprehensively, with the involvement of travel agents and the private sector operating in the tourism sector in Timor Tengah Selatan Regency.

CONCLUSION

The tourist income level factor has a significant effect and has a positive sign, while the travel cost factor has a negative effect on the level of tourist visits. This means that the greater the level of tourist income, the more it will influence their decision to increase the frequency of visits, and conversely, increasing travel costs will reduce the level of visits to the Fatumnasi natural tourist area.

The total value of consumer surplus as a proxy for the economic value of the Fatumnasi natural area is IDR. 663,630,600. Based on the number of tourist visits of 1,750 people in 2020, the average value of consumer surplus that can be achieved by each visitor is IDR. 379,217,-. In this way, the value of this natural tourist area can continue to increase if it is managed more professionally, or conversely, it will lose the value of the consumer surplus if its management fails.

Suggestions that can be put forward include the need to organise the Fatumnasi natural tourist area more professionally, such as by providing various supporting facilities and infrastructure to guarantee comfort (amenity) for tourists. There is a need to develop community business activities and encourage community participation through the development of MSMEs, especially in the productive sector, which has strong linkages, both forward and backward linkages, with existing tourism objects and activities.



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